

COMMENTS AND RESPONSES

Response to Comment on: van Dijk et al. Exercise Therapy in Type 2 Diabetes: Is Daily Exercise Required to Optimize Glycemic Control? *Diabetes Care* 2012;35: 948–954

We thank Thosar and Wallace (1) for their interest and constructive comment related to our recent work published in *Diabetes Care* (2). As this was the first study that investigated the impact of the frequency of exercise (within a fixed volume) on glycemic control, we specifically designed a short-term intervention study during which glycemic control was assessed over 48 h with exercise and dietary conditions being strictly standardized. The short-term nature of our study allowed for the assessment of the effects of exercise per se, without changes in dietary intake and habitual physical activity, or changes in body weight and/or composition. As discussed by Thosar and Wallace (1), such a strictly controlled study is difficult to perform and requires a high level of commitment from the subjects participating in the study. Inherent in the short-term nature of the study, we cannot exclude the possibility that the beneficial effects of daily (two 30-min exercise bouts per 48 h) or nondaily (one 60-min

exercise bout per 48 h) exercise were present beyond the 48-h assessment period. Given the equal impact of both exercise regimens on glycemic control during the second 24 h of the entire 48-h monitoring period (Fig. 3 in ref. 2), we speculate that possible differences between both exercise frequencies beyond the 48-h monitoring period are likely small or absent. Nonetheless, it is possible that the glucoregulatory effects of more frequent short bouts of exercise as opposed to less frequent longer bouts of exercise may accumulate in a different manner over time. Therefore, we agree with Thosar and Wallace (1) that future studies should investigate the impact of the frequency of exercise on glycemic control over a long-term period.

The second point raised by Thosar and Wallace (1) concerns the importance of the postbreakfast plasma glucose and insulin concentrations presented in Fig. 2. We certainly agree that these variables are of interest, though from a clinical perspective less relevant than (postprandial) glycemic control measured over the entire 48-h period (Fig. 3). It is important to keep in mind that the blood glucose and insulin concentrations measured directly following exercise are highly dependent on the timing of exercise (i.e., time of day, time before or after meal, before or after postprandial glucose/insulin peak) and do not necessarily translate to glycemic control over a longer time frame. Therefore, we believe that the glucoregulatory effects of exercise observed over the subsequent hours or day(s) after each exercise bout (2–4) are of greater relevance than the blood glucose concentrations measured immediately after exercise. Irrespective of the acute reductions in glucose concentration during exercise, we can conclude that short bouts of exercise performed on a daily basis are equally effective as more prolonged bouts of

exercise performed every other day to improve glycemic control in type 2 diabetic patients.

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